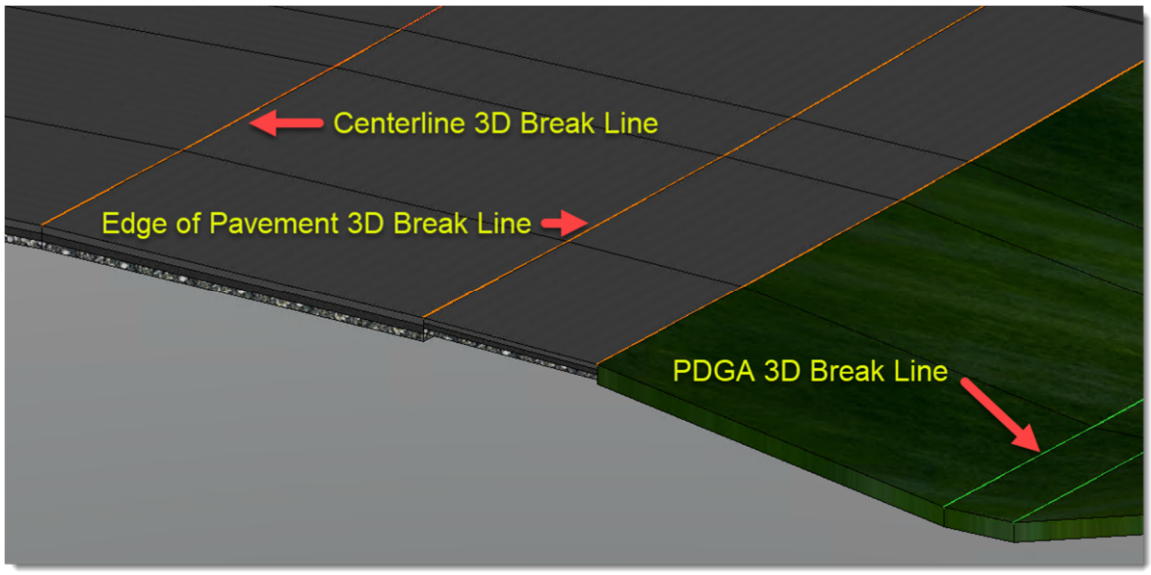
Introduction

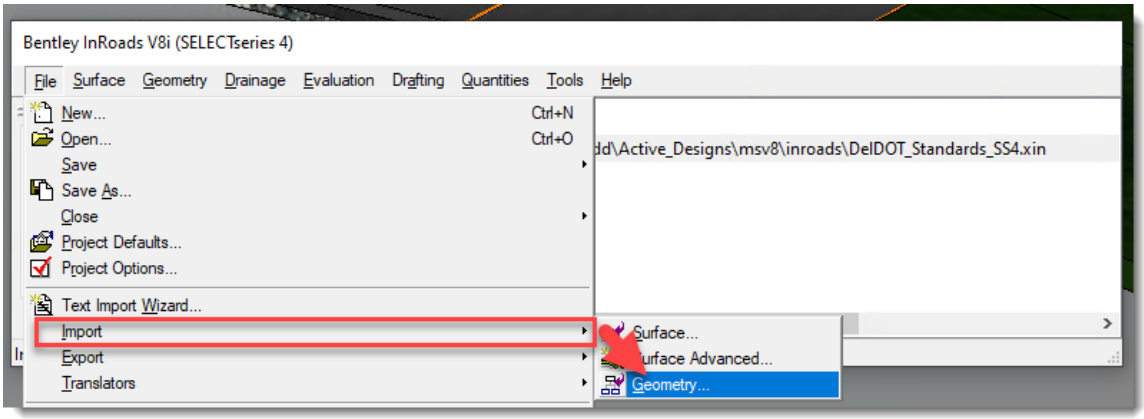
Annotating grades along 3-D linear features, such as edges of pavement and ditches (PDGA), can be performed automatically using the InRoads SELECTseries 4 (SS4)Legacy Tools, hereafter referred to as ***legacy tools***. The workflows listed below shall be used for annotating 3-D linear features.

Pavement Grades – InRoads SS4 Legacy Tools

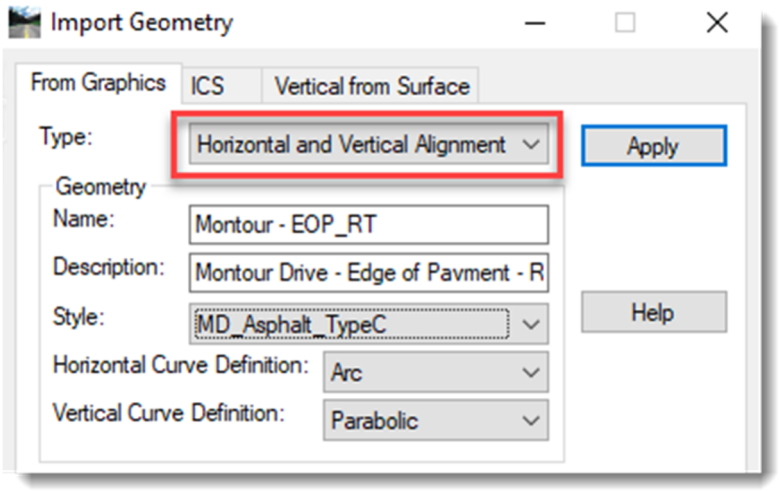
1) In order to annotate pavement grades, it is necessary to have established horizontal and vertical alignments at the break point locations where the grade annotations are to be displayed. Typically, the 3-D geometry or 3-D linear features are generated as the roadway templates are processed along the designated corridor.



2) The ***legacy tools*** are utilized for displaying annotations along pavement edges. The ***legacy tools*** require the 3-D linear features to be stored as horizontal and vertical alignments inside of a geometry project file (ALG). 3-D linear features can be imported into the ALG file by utilizing the ***File > Import > Geometry*** command in the ***legacy tools*** explorer window.



3) Under the ***From Graphics*** tab changing the ***Type*** to ***Horizontal and Vertical Alignment***. Be sure to select the 3-D linear features from the 3-D model **view** when importing the linear features.



4) Once the 3-D linear features have been imported into the geometry project file, the final step is to annotate the grades along these linear features. Grade annotation is performed in the 2-D model view, **NOT** the 3-D model view.

   a) Select ***Geometry > View Geometry > Station Offset Annotation***.

   b) Select ***Preferences*** and load the appropriate annotation type that you require.
      - ***Grade Ann – Small Radii Left*** places grades along a linear feature at 10’ intervals, with the grade text placed on the left side of the linear feature.
      - ***Grade Ann – Small Radii Right*** places grades along a linear feature at 10’ intervals, with the grade text placed on the right side of the linear feature.
      - ***Grade Annotation – Left Side*** places grades along a linear feature at 25’ intervals, with the grade text placed on the left side of the linear feature. Interval can be adjusted as needed.
      - ***Grade Annotation –Right Side*** places grades along a linear feature at 25’ intervals, with the grade text placed on the right side of the linear feature. Interval can be adjusted as needed.
      - ***Left*** and ***Right*** is based on geometry being generated in either a South-North or West-East heading or direction.

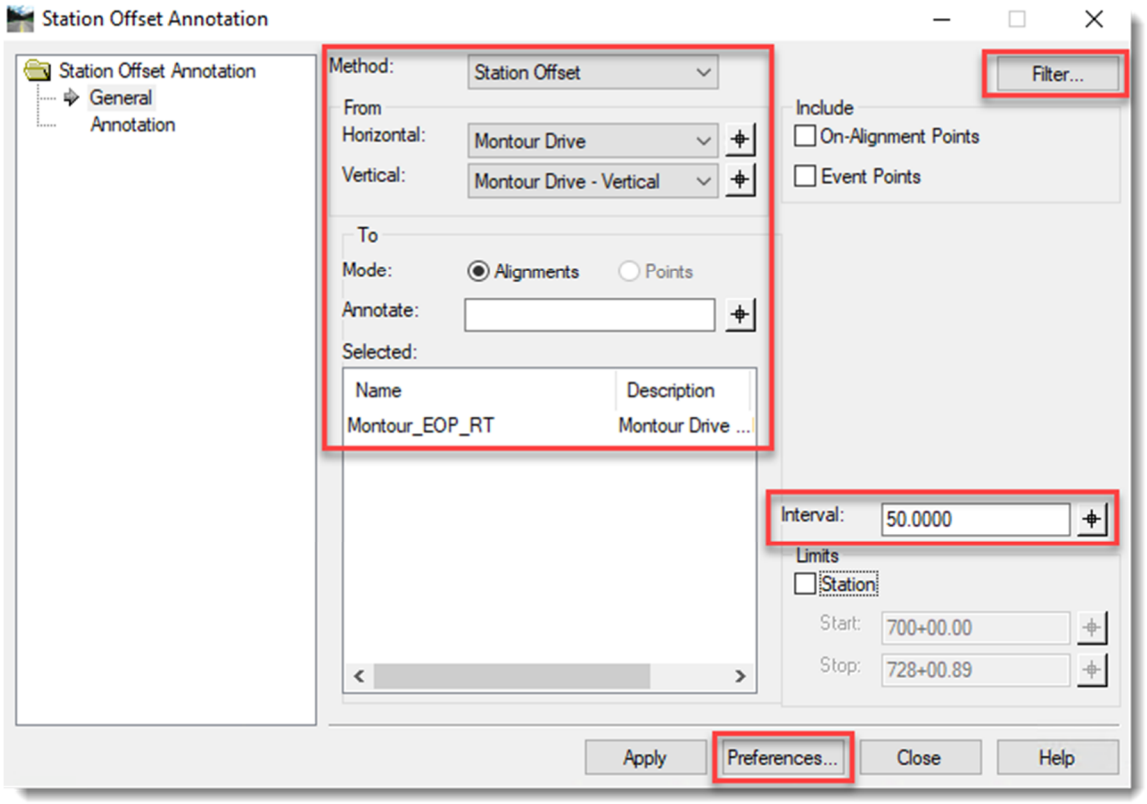
   c) Verify that ***Method*** is set to ***Station Offset***.

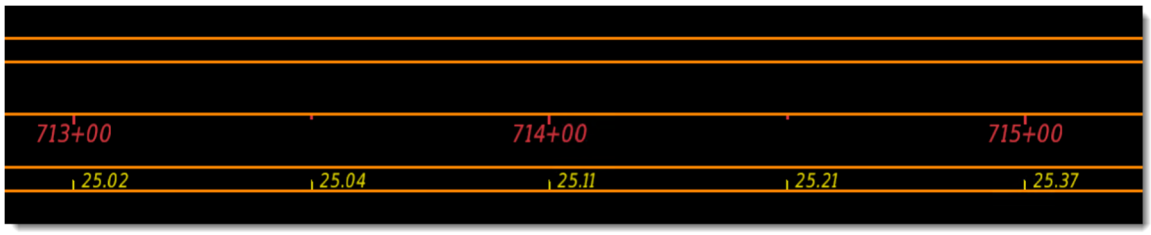
   d) Under the ***From*** section, select the horizontal and vertical alignment that will be used to coordinate the grade interval being applied to the annotated feature. Typically, this is set to the proposed construction baseline.

e) Under the ***To*** section, choose the linear features that are to be annotated with grades. Use the ***Filter*** button to see a list of available linear features for annotation.

f) Under **Interval**, set the interval for grade annotation. Review the guidelines on the DelDOT Design Resource Center (DRC) for samples of how grades are to be annotated on normal and superelevated sections of roadways. (**Ex: Normal Sections are annotated at 50' intervals and Superelevated Section are annotated at 25' intervals as well as at key stations.)**

g) Click **Apply** and review the results to ensure that the correct settings have been selected and the grade annotations are correct.





Ditch Grades – InRoads SS4 Legacy Tools

1) In order to annotate ditch grades on the plans it's necessary to have established horizontal and vertical alignment(s) at the PDGA location where the grade annotations are to be displayed. Typically, the 3-D geometry or 3-D linear features are generated as the roadway templates are processed along the designated corridor.

2) Similar to the previous discussion pertaining to pavement grades, displaying grade annotations along the ditch PDGA, requires the 3-D linear features to be stored as horizontal and vertical alignments inside of a geometry project file (ALG). Follow steps 2 and 3 under the "***Pavement Grades – InRoads SS4 Legacy Tools***" section to import the 3-D linear features.

3) Once the 3-D linear features have been imported into the geometry project file, the final step is to annotate the grades along these linear features. Grade annotation is performed in the 2-D model view, **NOT** the 3-D model view.

    h) Select ***Geometry > View Geometry > Station Offset Annotation***.

    i) Select ***Preferences*** and load the appropriate annotation type that you require.
    - ***PDGA – Left Side Ditches*** places grades along the PDGA linear feature at 50' intervals, coincident with the stationing from the horizontal alignment, with the leader and grade text placed on the left side of the linear feature.

    - ***PDGA – Right Side Ditches*** places grades along the PDGA linear feature at 50' intervals, coincident with the stationing from the horizontal alignment, with the leader and grade text placed on the right side of the linear feature..

    j) Verify that ***Method*** is set to ***Station Offset***.

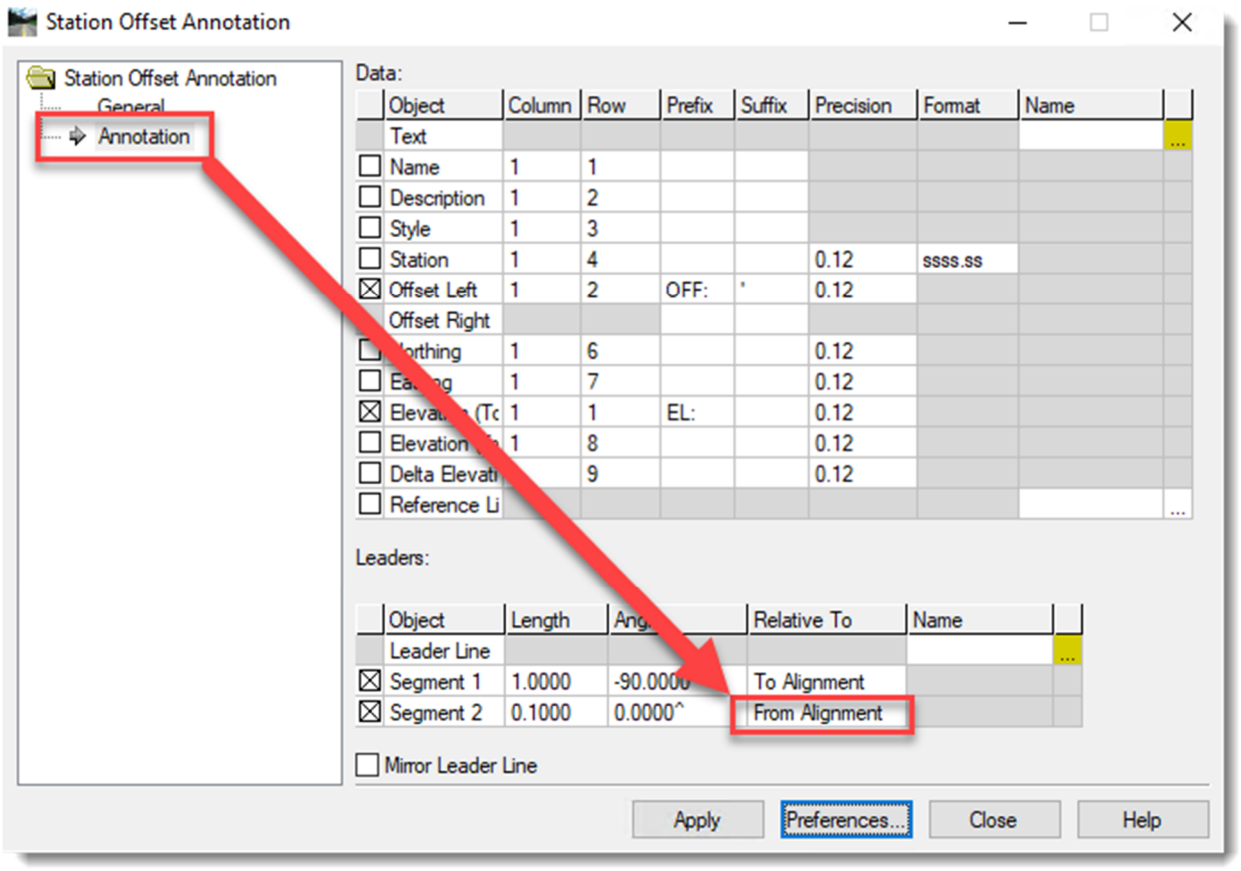
    k) Under the ***From*** section, select the horizontal and vertical alignment that will be used to coordinate the grade interval being applied to the annotated feature. Typically, this is set to the proposed construction baseline.

    l) Under the ***To*** section, choose the PDGA linear features that are to be annotated with grades. Use the ***Filter*** button to see a list of available linear features for annotation.

    m) Under **Interval**, set the interval for grade annotation.

    n) Click **Apply** and review the results to ensure that the correct settings have been selected and the grade annotations are correct.

    o) If the offset distance is not being annotated correctly (showing a 0.00' offset), be sure that the following setting has been enabled under the "Annotation" tab.


Station Offset Annotation
Station Offset Annotation
General
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Object | Length | Angle | Relative To | Name
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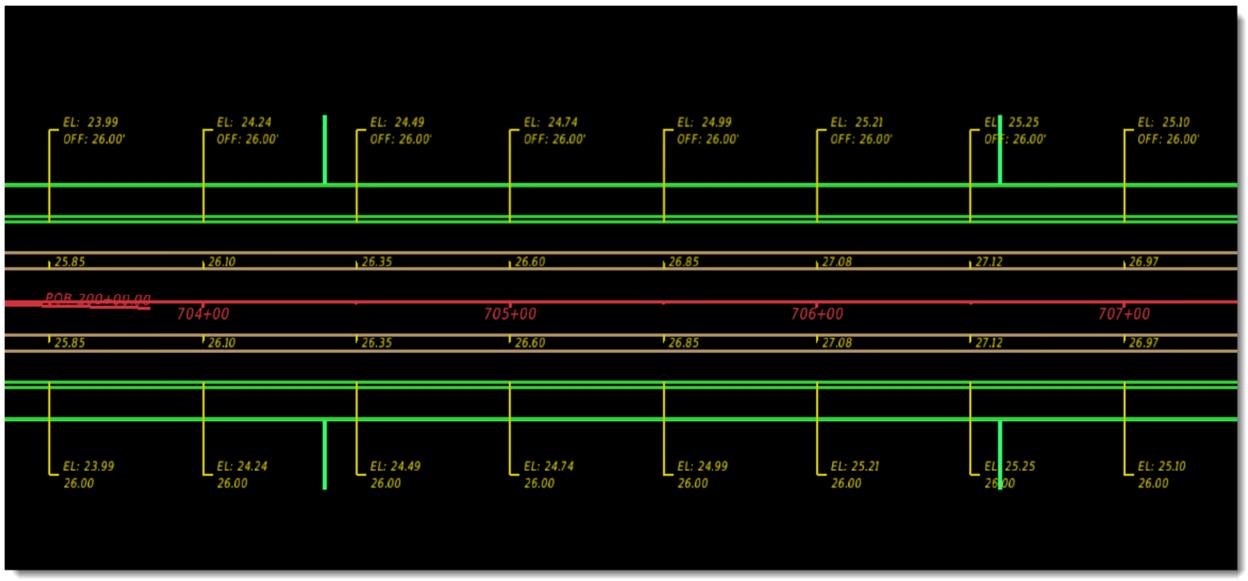
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